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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matters of)
)
Rulemaking to Amend)
Part 1 and Part 21 of the)
Commission's Rules to)
Redesignate the 27.5-29.5)
GHz Frequency Band and)
to Establish Rules and)
Policies for Local Multipoint)
Distribution Service;)
)
Applications for Waiver of)

CC Docket 92-297
RM-7872; RM-7722
PP-22

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SUMMARY

The Commission's proposal to reallocate the 28 GHz band to LMDS will provide consumers with access to a significant new video, voice and data technology employing various modulation techniques including digital. Suite 12's CellularVision technology can be used not only as a means of distributing one-way video programming in competition with cable television and other video distribution services, but also as a multi-function transport system capable of providing a wide variety of broadband two-way services that are, for the most part, currently unavailable from local exchange carriers on a competitive basis.

Suite 12 supports the Commission's proposal to allow the 28 GHz band to be used for virtually any video or telecommunications service. Such a policy will help to ensure that the spectrum allocated to LMDS will be used in a fashion that best suits the needs of the marketplace.

At least 1000 MHz of spectrum must be assigned to each licensee in a market if LMDS is to compete with fiber optic cable, broadband coaxial cable, direct broadcast satellite and similar services. Furthermore, to maximize the amount of spectrum that will be available for LMDS, licensees should be permitted to share their LMDS spectrum for point-to-point microwave backbone systems. The Commission should not set aside any portion of the 28 GHz band for MMDS.

Suite 12 endorses the concept of setting aside one-half of the LMDS spectrum for non-commercial use. Such action would increase the amount of educational, informational and public interest programming that is available to the public. It would also be consistent with other non-commercial set-asides that have been made by the Congress and the Commission. However, due to the potential

Commission's rules should presume non-common carrier status unless a licensee specifically requests otherwise.

The Commission should use Basic Trading Areas as the appropriate service area for LMDS. Basic Trading Areas will permit LMDS

fee for the use of its technology, such a fee does not constitute an interest in either an LMDS application or license. Moreover, the taking of equity positions in LMDS licensees or applicants by lending institutions and other passive investors to finance the construction of LMDS systems, should not be deemed by the Commission to be either an alienation or an acquisition of a direct or indirect ownership interest in an LMDS license or application.

Finally, the Commission erroneously denied Suite 12's request for a LMDS preference in Los Angeles on the ground that LMDS is substantially similar to a service currently provided by Hye Crest in New York. Suite 12's proposal for LMDS is distinct from the video services currently provided by Hye Crest pursuant to its commercial license. Suite 12's efforts to propose, develop and test LMDS occurred after Hye Crest was granted its license and after the pioneer's preference rules were adopted.

The Commission implicitly recognized the differences between Suite 12's LMDS proposal and the Hye Crest services by granting Suite 12 an LMDS pioneer's preference in the first place. Specifically, a pioneer's preference will only be granted to an innovator that proposes either a new service or a technological innovation to substantially enhance an existing service. Thus, to properly reward Suite 12 for its innovative efforts, the Commission must revise its tentative decision and award Suite 12 its preference in Los Angeles without requiring Hye Crest to surrender its New York license. Failure to modify its decision would be

inconsistent with the underlying intent of its pioneer's preference rules, and violative of the Administrative Procedure Act.

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Microwave Radio Service)
Rules;)
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Suite 12 Group Petition)
for Pioneer's Preference;)
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University of Texas -- Pan)
American Petition for)
Reconsideration of Pioneer's)
Preference Request Denial)
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To: The Commission

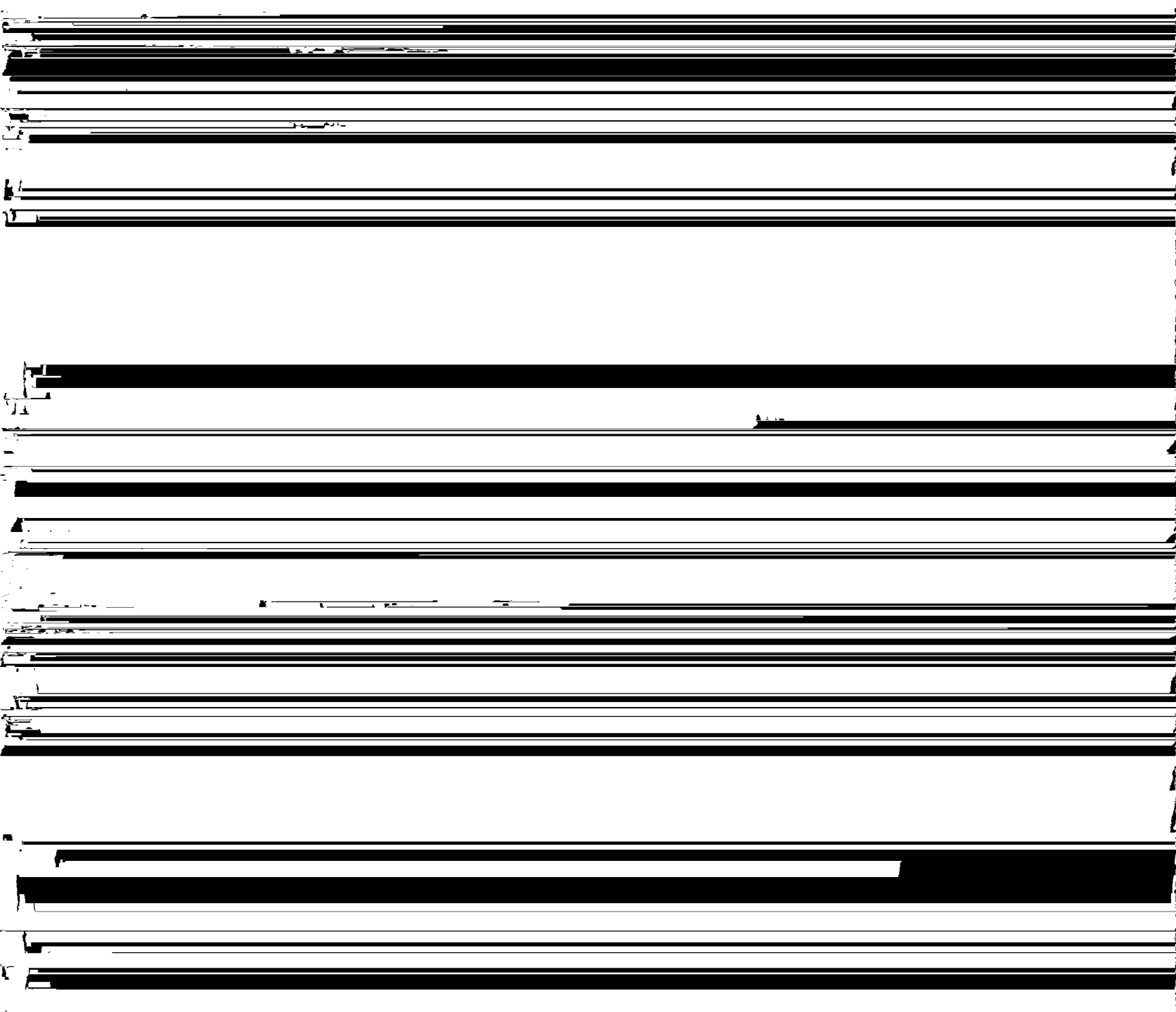
COMMENTS OF SUITE 12 GROUP

Pursuant to the Notice of Proposed Rulemaking, Order, Tentative Decision and Order on Reconsideration (hereinafter collectively referred to as the "Notice"), Suite 12 Group ("Suite 12"), by its attorneys, submits these Comments on the Notice's proposal to redesignate the use of the 28 GHz band from point-to-point microwave common carrier service to a Local Multipoint Distribution Service ("LMDS"), and to establish rules for that service. These Comments also address the Commission's tentative decision to award Suite 12 a pioneer's preference and require it to

elect either New York or Los Angeles as its preference area.

I. INTRODUCTION

1. Suite 12 applauds the Commission's proposal, responding to Suite 12's Petition for Rulemaking, RM 78-72 ("Petition"), to reallocate the 28 GHz band from point-to-point microwave common



commercially viable and beneficial to the public. It is noteworthy that in granting the Hye Crest waiver, the Commission validated Suite 12's proof of this technology despite the voices of the technical naysayers.^{3/}

3. Furthermore, and as the Commission has recognized in paragraph 14 of the Notice, Suite 12 has demonstrated that 28 GHz frequencies can be effectively and efficiently used for a variety of services. Suite 12's CellularVision LMDS system is a multicell configuration distribution system with demonstrated return path capability.^{4/} Pursuant to the regular commercial and market test experimental licenses issued to Hye Crest in New York, a 49 channel video distribution system is in commercial operation^{5/} with a reservation of: (i) three channels for additional premium programming; (ii) five channels for pay per view programming; and,

^{3/}See generally License file, Hye Crest Management, Inc., Application for New Station in the Point-to-Point Microwave Service in the 27.5-29.5 GHz Band, Application File No. 10380-CF-P-88.

^{4/}For a complete technical description of the CellularVision system design, see "Suite 12 System Analysis For Video Distribution and Secondary Services," prepared by the David Sarnoff Research Center, September 17, 1991, Princeton, New Jersey ("Sarnoff Report"), attached as Exhibit B to Suite 12's Petition for Rulemaking (RM 78-72) filed September 24, 1991.

^{5/}While the present system is used for transmitting 50 video

(iii) an experimental channel (channel 50) used for two-way video (teleconferencing), voice and data.^{6/}

4. There has been overwhelming public enthusiasm and interest regarding the possibility of LMDS. In addition to the large volume of public inquiry received by the Commission,^{7/} Suite 12 has been inundated with thousands of telephone calls and other inquiries from entities all over the world, including some of the world's largest communications, manufacturing and engineering companies. Suite 12 has also conducted hundreds of demonstrations of its system operations, including video distribution and various two-way voice, video, data and digital services.

5. Many large telecommunications companies have indicated to Suite 12 that proposed operations at 28 GHz have caused them to rethink the issue of fiber optics to the home (the so-called "last mile"), as an alternative to deliver broadband services. In addition, many local, state, and federal government agencies have expressed interest in the system, especially relating to its economic viability and the potential for competition with cable and

^{6/}The signal-to-noise ratio, in fringe areas, for both the video distribution and teleconferencing market test was measured at one site to be 51 dB, with a bit error rate for a 2.9 megabit digital signal of better than 1 part in 10 billion. Of course, other sites in other nodes could have different signal-to-noise criteria. See, e.g., CATEL, "System Simulation Test," prepared for CellularVision, May 7, 1992; Letter dated March 8, 1993 from P.H.

telephony. All were seeking information about the availability of the service and how the service is provided.

II. LMDS SERVICE OFFERINGS

such services can also be offered by local exchange carriers; however, for an economic offering of such services to the public, such an array of different services awaits the ubiquitous placement of ISDN and digital local loops into the telephone network for the lower data rates, and fiber to the home for the larger data rates. These enhancements to the telephone plant are unlikely to be in place for another ten years. Therefore, Suite 12 believes that two-way voice and data services will be just as important, if not more important, than mere video distribution services. In some cells, voice and data services may be in greater demand than video services.^{10/} In February 1991, Suite 12 demonstrated both a digital and FM technology at 28 GHz with measured bit error rates of better than one part in 10 billion^{11/} running a 2.9 megabit digital data rate.

~~10/12/91 Suite 12 to American services at 28 GHz with measured bit error rates~~

7. Suite 12 supports the Commission's proposal, at paragraph 16 of the Notice, to permit the 28 GHz band to be used for any video or telecommunications service (on either or both the vertical and horizontal polarization planes of the assigned frequency). Such flexibility will serve the public interest and permit LMDS to be used as a multifunction transport system to offer the service which best suits the public. The flexibility permitting the LMDS operator to target its services on as narrow a basis as a single cell (which can vary in size) will also permit the LMDS operator to respond efficiently to the needs of the consumers within a particular service area.

8. In order to ensure that LMDS is a competitive force in the telecommunications marketplace and to encourage and nurture the development and growth of LMDS, the Commission must promulgate rules that will provide "maximum flexibility for licensees to construct communications systems in which the public is interested."^{12/} (emphasis added). An integral part of such flexibility is the need for adequate spectrum. A LMDS licensee must have at least 1000 MHz of spectrum in order to develop into an economically and technically viable service and to be competitive with broadband fiber optic providers, broadband coaxial cable providers, and direct broadcast satellite providers. In the near future, there will be five (5) competitors to LMDS in the video distribution marketplace: DBS, MMDS, cable, SMATV distribution and Video Dialtone. LMDS' spectrum requirement is not sheer conjecture

^{12/} See Notice at ¶ 17.

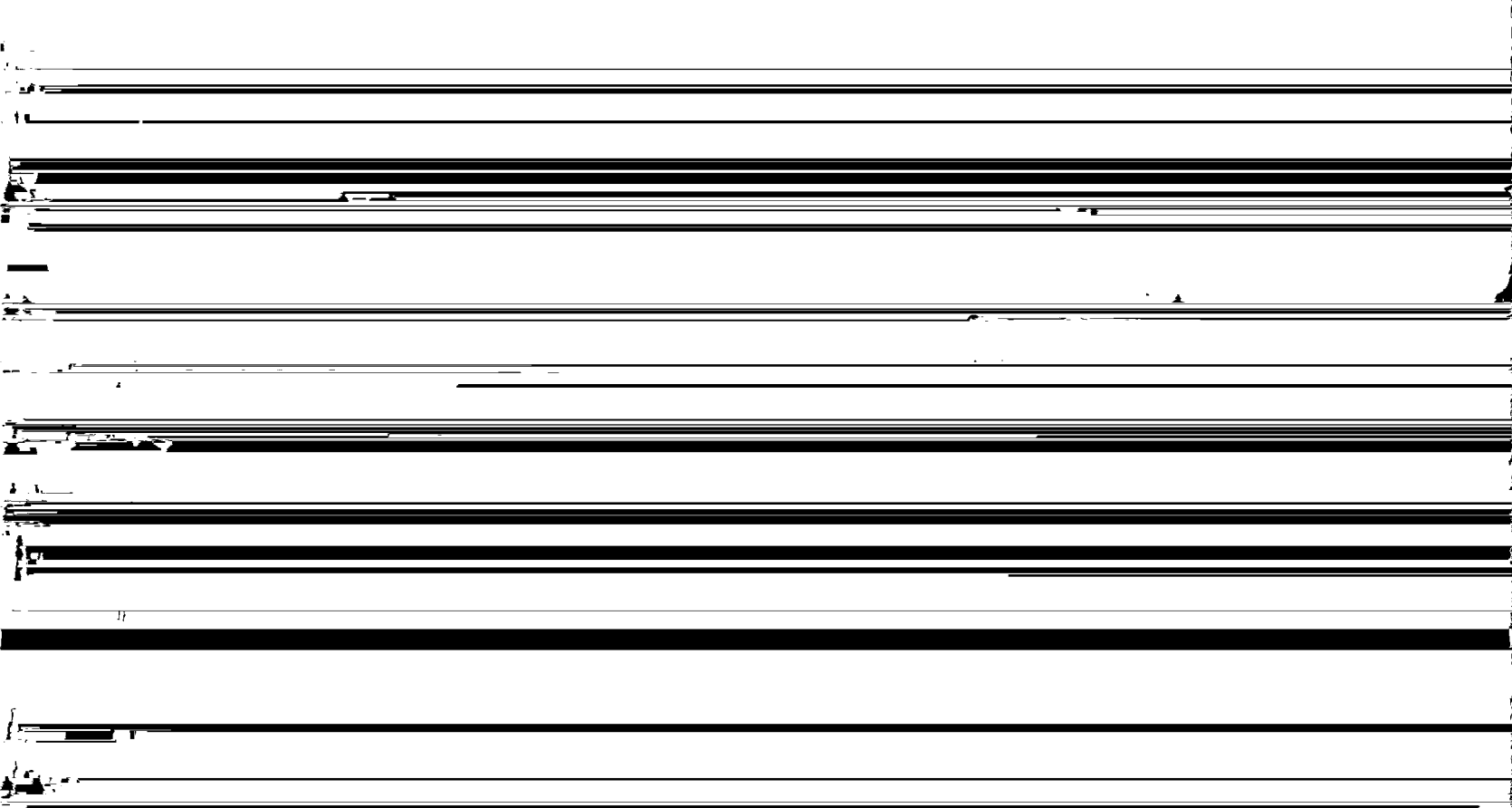

because sufficient spectrum capacity is needed to provide meaningful competition. Moreover, any low cost compression techniques employed by LMDS competitors to further expand their broadband services can be equally applicable to LMDS services, thereby maintaining its competitive position relative to other technologies.

9. Suite 12 endorses the Commission proposal at paragraph 20 of the Notice to authorize two blocks of 1000 MHz each for LMDS operations in the 28 GHz band. A licensee requires 1000 MHz of spectrum as the minimum amount necessary to create a truly competitive LMDS.^{13/} Each 1000 MHz of spectrum must utilize horizontal and vertical polarization diversity (orthogonal polarization) in adjacent cells as specified in Suite 12's

^{13/}Twice in recent years, the Commission has made the mistake of creating new services and then expanding inadequate spectrum for

Petition.^{14/} This will ensure noninterference between cells. The use of "bounce" or multipath to achieve reception in "shadowed" areas also requires cross-polarization in order to avoid interference from other similar frequency transmissions. The cross-polarization technique can also be used to expand the system into two-way services.

10. Furthermore, to ensure that the maximum amount of spectrum will be available to LMDS licensees, and to employ the frequency spectrum in the most efficient manner, Suite 12 believes it is essential that the Commission's LMDS rules provide that the licensees for each 1000 MHz be allowed to use the other licensee's 1000 MHz for its point-to-point microwave backbone system, provided that no harmful interference is caused to the other licensee's



the LMDS licensee's widebeam transmissions can coexist with point-to-point operations (as long as certain distance separation and angle requirements are met),^{15/} it may be possible that during extremely heavy rainfall a positive feedback to the desired signal might occur if the same frequency is used for intercell links. The sharing technique would alleviate this problem. Such operations would permit maximum use of authorized frequencies to serve customer demands, while at the same time, provide the licensee with sufficient spectrum for its backbone system.

12. Suite 12 agrees with the Commission's tentative conclusion, at paragraph 19 of the Notice, not to set aside any portion of the 28 GHz band for MMDS licensees because MMDS is maturing as an industry and becoming more competitive with the help and encouragement of the FCC.^{16/} MMDS needs no further Commission-provided incentives or "training wheels".

IV. PUBLIC BROADCASTING ALLOCATION

13. Footnote 6 of the Notice seeks comment on whether the Commission should reserve one-half of the spectrum at 28 GHz for noncommercial use. Suite 12 assumes that such a reservation would mean that in every market area there would be one commercial licensee operating on the Band A frequency, and one noncommercial

^{15/} See Suite 12's Petition at p. 7. See also Amendment to Hye Crest Management, Inc., Application, File No. 10380-CF-P-88, filed January 26, 1989.

^{16/} See, e.g., Second Report and Order, Gen. Docket No. 90-54, 6 FCC Rcd. 6792 (1991); Report and Order, PR Docket No. 92-80, Adopted: January 14, 1993, Released: February 12, 1993.

licensee operating on the Band B frequency. Suite 12 endorses such a reservation of half the spectrum for noncommercial use.

A. Congressional Policy

14. It is well-founded Congressional policy that the public interest requires that public telecommunications services be accessible by as many citizens as possible, regardless of the technology or systems employed, and regardless of whether those services, in the past, have been primarily distributed by broadcast technology. The Public Telecommunications Act of 1992, signed into law by President Bush on August 26, 1992, adds a new paragraph -- Section 396(a)(9) -- to the Communications Act of 1934. Section 396(a)(9) states:

. . . it is in the public interest for the Federal Government to ensure that all citizens of the United States have access to public telecommunications services throughout all appropriate available telecommunications^{17/} distribution technologies. . . .

15. The legislative history of this statute is also very clear. The House Committee Report states Congress' finding that access to public telecommunications services, through all available distribution technologies, is intended to advance the compelling governmental interest in increasing the amount of educational, informational, and public interest programming available to the public:

The Committee recognizes the
tremendous expansion of

^{17/} Pub. L. No. 102-356, 106 Stat. 949 (Aug. 26, 1992).

telecommunications delivery systems made possible by technological advances. The Committee believes that the full potential of telecommunications as a means to address educational issues can be realized only if the public is provided access to public service programming through all distribution technologies -- not just broadcast -- that are available to them. To achieve this potential, the sound public policy of reserving broadcast channels for public television and radio should be extended to reserve capacity for public service programming on new distribution technologies.

The Committee believes that it is in the public interest to ensure that all citizens have access to public telecommunications services. The Committee strongly endorses the policy of broad access to the essential public services offered by public telecommunications, regardless of the technology used to deliver those services, in order to advance the compelling governmental interest in increasing the amount of educational, informational and public interest programming available^{18/} to the nation's citizens.

16. Congress has long advocated a strong federal policy of access to public telecommunications services. In the 1967 Act, Congress found that:

It is necessary and appropriate for the Federal Government to complement, assist and support a national policy that will most effectively make public

^{18/}H.R. Rep. No. 363, 102d Cong., 1st Sess. 18 (1991). The Senate Report on this legislation contains similar language. See, e.g., S. Rep. No. 221, 102d Cong., 1st Sess. 7 (1991).

telecommunications services
available to all citizens of the
United States.^{19/}

17. Congress has also adopted policies facilitating access for public service programming in two additional distribution technologies: cable and direct broadcast satellite ("DBS"). In the Cable Act, which became law on October 5, 1992, Congress has required cable systems to carry public television stations. Congress specifically recognized that its "must-carry" provision was part of its broader policy of facilitating the delivery of public telecommunications services.

The government has a compelling interest in ensuring that [public telecommunications services] remain fully accessible to the widest possible audience without regard for the technology used to deliver these educational and informational services.^{20/}

^{19/}47 U.S.C. Section 396(a)(7).

^{20/}H.R. Rep. 682, 101st Cong., 2d Sess. 47 (1991). Suite 12 cannot support a paradigm calling for reservation of channel capacity for noncommercial use in either or both of the 1000 MHz blocks. Moreover, Suite 12 does not understand how noncommercial entities could support such a paradigm because by asking the Commission for a reservation-of-channel-capacity model, non-commercial entities undermine their request for a set-aside of 1000 Mhz. How can one or two 20 MHz channels satisfy the need for 1000 MHz? By asking for a few channels, noncommercial entities imply that they have no need for, or cannot construct the facilities to use, the entire 1000 MHz.

The proposal in Footnote 6 of the Notice, as Suite 12 understands it, is much more akin to the Commission's precedents in reserving broadcast spectrum for noncommercial radio and television stations than to those precedents involving the set-aside of channels on cable systems or DBS systems. Accordingly, the Commission should follow its spectrum reservation precedents. In the case of cable systems, no spectrum was involved. In the case of DBS, no proposal to reserve DBS spectrum for noncommercial

(continued...)

18. In the same cable legislation, Congress provided for the reservation of capacity, and for preferential rates, for the distribution of public service programming on the newly-emerging direct broadcast satellite service.^{21/}

19. This reservation of capacity on the emerging DBS technology, and provision of preferential rates for utilization of that capacity, provide direct precedents and support for a reservation of one-half of the spectrum at 28 GHz for noncommercial use of all types, including, but not limited to, municipal, educational and medical applications. The must-carry and DBS provisions constitute the most recent restatements of Congress' fundamental public telecommunications access policy.

20/ (...continued)
entities was ever made. Furthermore, noncommercial entities can be required to pay for such DBS channel capacity.

A reservation of channel capacity paradigm has quite different competitive implications for LMDS than does the set-aside of 1000 MHz per market for noncommercial use. Reservation of channel capacity for noncommercial use will cripple a LMDS licensee's ability to provide effective competition with cable television because LMDS video channel capacity is already far less than what is available to subscribers to the vast majority of cable systems. Furthermore, LMDS video providers will have to compete

B. Commission Policy

20. The Commission has also been a steadfast supporter of the reservation of spectrum for access to public telecommunications services. Beginning in 1952, the Commission, recognizing the unique and important services that such television programming could offer, reserved 242 channels on the Ultra High Frequency ("UHF") spectrum (Channels 14-83) for educational television.^{22/} Since then, the Commission has defended these reservations against efforts by commercial broadcasters to "de-reserve them."^{23/} Moreover, the Commission has reserved additional channels to further the reach of public television service,^{24/} to provide better picture quality,^{25/} and to permit the formation of networks of noncommercial educational stations.^{26/} Most recently, the Commission committed to carry over its channel reservation policy in its allotments of high definition television ("HDTV") channels to broadcasters. It has committed to reserve noncommercial and educational HDTV channels for existing public broadcasters and to

^{22/} Television Assignments, Sixth Report and Order, 41 FCC 148 (1952).

^{23/} Id.

^{24/} Id.

^{25/} Television Channel Assignments at Nashville, Tenn., 26 R.R.2d 1667 (1973).

^{26/} Second Report and Order/Further Notice of Proposed Rulemaking, in MM Docket No. 97-268 (released May 8, 1992); Third Report and Order/Further Notice of Proposed Rulemaking, in MM Docket No. 97-268 (adopted Sept. 17, 1992).

preserve vacant noncommercial allotments in its allotment plan.^{27/} The Commission has further recognized the "important role noncommercial educational stations play in providing quality programming to the public and the financial constraints they face in building and running their stations."^{28/}

V. Ka-BAND SHARING ISSUES

21. The establishment of LMDS will not increase the difficulty of Ka-band sharing between satellite and microwave users. Such sharing is not feasible today in most urban areas because of the existing widespread licensing of point-to-point and point-to-multipoint microwave links in the downlink part of the Ka-band.

22. In the United States, the following three pairs of frequencies are allocated for domestic-fixed satellite communications:

<u>Band</u>	<u>Uplink Frequency</u>	<u>Downlink Frequency</u>
C-band	5925-6425 MHz	3700-4200 MHz
Ku-band	14.0-14.5 GHz	11.7-12.2 GHz
Ka-band	27.5-30.0 GHz	17.7-20.2 GHz

23. The up and down links of the C-band allocations are co-equally shared between fixed satellite and terrestrial microwave.

^{27/}Id.

^{28/}Second Report at ¶ 36. In its latest notice, the Commission, recognizing the unique funding constraints of public broadcasters, asked whether they need additional time to file and construct HDTV facilities. See FCC News Release, September 17, 1992.

This is also true of the 17.7-19.7 GHz and 27.5-29.5 GHz portions of the Ka-band. The Ku-band allocation, however, is allocated solely on a primary basis to fixed satellite service; terrestrial microwave is only permitted to operate in the 14.2-14.4 GHz range, and is subject to power and antenna pointing restrictions to avoid interference. Similarly, 19.7-20.2 GHz and 29.5-30.0 GHz (Ka-band) are allocated solely to satellite service.

24. The primary means of sharing C-band spectrum between satellite and microwave users is geographical separation. This is accomplished through frequency coordination. Because of the proliferation of C-band terrestrial microwave systems, starting about 25 years prior to the first C-band domestic satellite systems, it has always been very difficult to coordinate satellite earth stations in, and near, urban areas. C-band earth stations that need to operate on all 24 of the 36 MHz wide C-band transponders are always located in remote rural areas.^{29/}

25. Primarily due to the proliferation of microwave in the 17.7-19.7 GHz band, Ka-band earth stations will also have a difficult time finding interference-free sites in urban areas. The first widespread use of 18 GHz by terrestrial microwave began about eight years ago, after the Commission adopted a new channel plan for the band.^{30/} The 18 GHz channel plan includes both point-to-

^{29/} C-band earth stations that need to operate only on a few narrow frequencies can often be shoehorned into urban locations.

^{30/} See Memorandum Opinion and Order, Gen. Docket Nos. 82-334 and 79-188 (Joint Reconsideration of First Report and Order, Docket No. 82-334 and Second Report and Order, Docket No. 79-188), released August 17, 1984, 49 Fed. Reg. 37760).